

Shortname: PROF0Z
Longname: OMI/Aura Vertical Ozone (03) Profile 1-Orbit L2 Swath
13x48 km
PFS Version: 0.9.3
Date: 27 July 2010
Author(s): Kai Yang (UMBC), Xiong Liu (UMBC), Pawan K. Bhartia
(NASA)

PGE Version: 0.9.3 and later
Lead Algorithm Scientist: Xiong Liu, Kai Yang, Kelly Chance, Pawan K.
Bhartia
Lead Algorithm Developer: Xiong Liu, Kai Yang, Thomas P. Kurosu
Lead PGE Developer: Kai Yang, Xiong Liu
PGE Developer(s): OMI SIPS

Description: >

This document specifies the product format for the Version 0.9.3 and subsequent delivery of the PROF0Z L2 PGE which uses OMI UV (both UV-1 and UV-2) measurements (Ref 1) to retrieve vertical ozone profile and other parameters. The product is stored as one HDF-EOS 5 swath file for each granule (i.e., one orbit) of PROF0Z L2 data, and has a size of xxx Mb.

Global Metadata:

- Metadata Name: AlgorithmName
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE
Description: Actual is "PROF0Z"
- Metadata Name: AlgorithmVersion
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE
Description: Actual is "Version 0.9.3"
- Metadata Name: AuthorAffiliation
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PCF
Description: Actual is "GEST/UMBC and GSFC/NASA"

- Metadata Name: AuthorName
 Mandatory: T
 Data Type: HE5T_NATIVE_CHAR
 Number of Values: 1
 Range or Valid: Not applicable (free format).
 Data Source: PCF
 Description: >
 Actual is "Xiong Liu, Kai Yang, Pawan K. Bhartia"
- Metadata Name: GranuleDay
 Mandatory: T
 Data Type: HE5T_NATIVE_INT
 Number of Values: 1
 Range or Valid: Range is 1 to 31.
 Data Source: PGE
 Description: >
 The day of the month at the start of the granule.
- Metadata Name: GranuleJulianDay
 Mandatory: T
 Data Type: HE5T_NATIVE_INT
 Number of Values: 1
 Range or Valid: Range is 1 to 365.
 Data Source: PGE
 Description: >
 The Julian day of the year at the start of the granule.
- Metadata Name: GranuleMonth
 Mandatory: T
 Data Type: HE5T_NATIVE_INT
 Number of Values: 1
 Range or Valid: Range is 1 to 12.
 Data Source: PGE
 Description: The month at the start of the granule.
- Metadata Name: GranuleYear
 Mandatory: T
 Data Type: HE5T_NATIVE_INT
 Number of Values: 1
 Range or Valid: Range is 2000 to 2099.
 Data Source: PGE
 Description: >
 The (four-digit) year at the start of the granule.
- Metadata Name: HDFEOSVersion
 Mandatory: T
 Data Type: HE5T_NATIVE_CHAR
 Number of Values: 1
 Range or Valid: Automatically set by HDF-EOS.
 Data Source: HE

Description: Example is "HDFEOS_5.1.5".

– Metadata Name: InputVersions
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE
Description: >
A list of every ESDT (including version) whose product was used as input for the processing.

– Metadata Name: InstrumentName
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Valid are "HIRDLS", "MLS", "OMI" and "TES".
Data Source: PCF
Description: Actual is "OMI" (see Section 6.1 of Reference 2).

– Metadata Name: OrbitData
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Valid are "DEFINITIVE" and "PREDICTED".
Data Source: L1B
Description: >
Indicates whether orbit data used by the L1B processor is definitive or predicted.

– Metadata Name: OrbitNumber
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Range or Valid: Range is 1 to 999999.
Data Source: PGE
Description: OMI Orbit number.

– Metadata Name: PGEVERSION
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Range is "0.0.0" to "9.9.99".
Data Source: PCF
Description: Actual is "0.9.3".

– Metadata Name: ProcessingCenter
Mandatory: T

Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PCF
Description: Example is "OMIDAPS".

– Metadata Name: ProcessingHost
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PCF
Description: >
The output from executing the Unix "uname -a" command on the processing machine.

– Metadata Name: ProcessLevel
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Valid are "1b", "2" and "3".
Data Source: PCF
Description: Actual is "2".

– Metadata Name: TAI93At0z0fGranule
Mandatory: T
Data Type: HE5T_NATIVE_DOUBLE
Number of Values: 1
Range or Valid: Range is 0.0d+00 to 1.0d+30.
Data Source: PGE
Description: >
The TAI93 time at 0z of the granule (see Section 6.1 of Reference 2).

– Metadata Name: TAI93Start0fGranule
Mandatory: T
Data Type: HE5T_NATIVE_DOUBLE
Number of Values: 1
Range or Valid: Range is 0.0d+00 to 1.0d+30.
Data Source: PGE
Description: >
The TAI93 time at the start of granule (see Section 6.1 of Reference 2).

– Metadata Name: SpectralDomainControls
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE

Description: >
Switches used in the algorithm (set by default or inputs) that controls spectral channels used in the retrievals, such as the number of channels, their wavelength ranges, or if spectral coadding is performed.

– Metadata Name: SlitControls
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE
Description: >

Switches used in the algorithm (set by default or inputs) that controls slit functions used in the retrievals, such as the type of the slit, and or if the slit widths change with wavelength.

– Metadata Name: WavelengthCalibrationControls
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE
Description: >

Switches used in the algorithm (set by default or inputs) that controls wavelength calibration done in the retrievals, such as if calibration is performed before retrieval, or before coadding, or if solar wavelength calibration is performed.

– Metadata Name: ProcessingControls
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE
Description: >

Switches used in the algorithm (set by default or inputs) that controls how processing is done in the retrievals.

– Metadata Name: L1_RadianceFilename
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1

Range or Valid: Not applicable (free format).
Data Source: PGE
Description: Example is ".\OMI-Aura_L1-
OML1BRUG_2006m0711t2226-o10582_v003-2007m0515t122953.he4".

- Metadata Name: L2_CloudFilename
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE
Description: Example is ".\OMI-Aura_L2-
OMCLD02_2006m0711t2226-o10582_v003-2007m1130t190603.he5".

- Metadata Name: FitVariableNames
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE
Description: >
Names of fitting variables used in the retrieval algorithm.

- Metadata Name: OtherGasNames
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE
Description: >
Names of Other (non-ozone) trace gases used in the retrieval algorithm.

- Metadata Name: NonGasVariableNames
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE
Description: >
Names of non-gas fitting variables used in the retrieval algorithm.

- Metadata Name: NonGasVariableUnits
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE
Description: >

Units of non-gas fitting variables used in the retrieval algorithm.

Swath Metadata:

- Metadata Name: SwathName
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: Valid is "OMI Vertical Ozone Profile"
Data Source: PGE
Description: Actual is "OMI Vertical Ozone Profile"
- Metadata Name: VerticalCoordinate
Mandatory: T
Data Type: HE5T_NATIVE_CHAR
Number of Values: 1
Range or Valid: >
Valid: Valid are "Pressure", "Altitude", "Potential Temperature", "Partial Column" and "Total Column".
Data Source: PGE
Description: >
Actual is "Partial Column" (see Section 6.2 of Reference 2).
- Metadata Name: nXtrack
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Range or Valid: 1 to 30
Data Source: PGE
Description: Number of cross-track pixels in the output
- Metadata Name: nXtrackp1
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Range or Valid: 2 to 31
Data Source: PGE
Description: Number of cross track pixels plus 1
- Metadata Name: nTimes
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Range or Valid: 1 to 1700
Data Source: PGE
Description: Number of along-track scan lines in the output
- Metadata Name: nTimesp1
Mandatory: T

Data Type: HE5T_NATIVE_INT
Number of Values: 1
Range or Valid: 1 to 1700
Data Source: PGE
Description: Number of along-track scan lines plus 1 in the output

– Metadata Name: nLayer
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Range or Valid: 1 to 101
Data Source: PGE
Description: Number of vertical layers used in the retrievals.
Ozone values are given at each layer.

– Metadata Name: nLayerp1
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Range or Valid: 2 to 102
Data Source: PGE
Description: Number of vertical levels used in the retrievals.
It equals to nLayer + 1. Atmospheric profiles of pressure, altitude, temperature are provided at each level.

– Metadata Name: nElms
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Range or Valid: 1 to 65535
Data Source: PGE
Description: Number of elements in the upper triangle (exclude the diagonal) of the ozone noise covariance matrix.
The size of the ozone noise covariance matrix is nLayer x nLayer, so the nElms = (nLayer*(nLayer-1))/2.

– Metadata Name: nFitvar
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Range or Valid: 1 to 200
Data Source: PGE

Description: Number of fitting variables ($n_{\text{fitvar}} = n_{\text{Layer}} + n_{\text{Parameter}} + n_{\text{Gas}}$) used in the retrievals.

– Metadata Name: `nParameter`
Mandatory: `T`
Data Type: `HE5T_NATIVE_INT`
Number of Values: `1`
Range or Valid: `1 to 200`
Data Source: `PGE`
Description: Number of fitting variables, excluding (both ozone and other) trace gas variables used in the retrievals.

– Metadata Name: `nWavelengthMax`
Mandatory: `T`
Data Type: `HE5T_NATIVE_INT`
Number of Values: `1`
Range or Valid: `1 to 600`
Data Source: `PGE`
Description: Maximum number of fitting wavelengths used in the retrievals. Set to `-1` when `FitSpectra`, `SimRadiance`, and Wavelength are not written to the output file.

– Metadata Name: `nChannel`
Mandatory: `T`
Data Type: `HE5T_NATIVE_INT`
Number of Values: `1`
Range or Valid: `1 to 254`
Data Source: `PGE`
Description: Number of spectral channels used in the retrievals.

– Metadata Name: `nGas`
Mandatory: `T`
Data Type: `HE5T_NATIVE_INT`
Number of Values: `1`
Range or Valid: `1 to 254`
Data Source: `PGE`
Description: Number of trace gases (other than ozone) retrieved.

– Metadata Name: `nXtrackMax`
Mandatory: `T`
Data Type: `HE5T_NATIVE_INT`
Number of Values: `1`
Range or Valid: `1 to 60`
Data Source: `PGE`
Description: Maximum number of cross-track pixels.

- Metadata Name: nTimesMax
 Mandatory: T
 Data Type: HE5T_NATIVE_INT
 Number of Values: 1
 Range or Valid: 1 to 2000
 Data Source: PGE
 Description: Maximum number of along-track scan lines.

- Metadata Name: XOffset
 Mandatory: T
 Data Type: HE5T_NATIVE_INT
 Number of Values: 1
 Range or Valid: 1 to 30
 Data Source: PGE
 Description: Start pixel in the cross-track direction.

- Metadata Name: YOffset
 Mandatory: T
 Data Type: HE5T_NATIVE_INT
 Number of Values: 1
 Range or Valid: 0 to 60
 Data Source: PGE
 Description: Start scan line in the along-track direction.

- Metadata Name: nXbin
 Mandatory: T
 Data Type: HE5T_NATIVE_INT
 Number of Values: 1
 Range or Valid: 0 to 60
 Data Source: PGE
 Description: Number of pixels spatially coadded in the cross-track direction.

- Metadata Name: nYbin
 Mandatory: T
 Data Type: HE5T_NATIVE_INT
 Number of Values: 1
 Range or Valid: 0 to 60
 Data Source: PGE
 Description: Number of pixels spatially coadded in the along-track direction.

- Metadata Name: NumTimes
 Mandatory: T
 Data Type: HE5T_NATIVE_INT
 Number of Values: 1
 Range or Valid: 1 to 2000
 Data Source: PGE
 Description: number of uncoadded along-track scan lines in the full granule.

- Metadata Name: NumTimesSmallPixel
Mandatory: T
Data Type: HE5T_NATIVE_INT
Number of Values: 1
Range or Valid: 1 to 100000
Data Source: PGE
Description: number of along-track small pixels in the full granule.

- Metadata Name: EarthSunDistance
Mandatory: T
Data Type: HE5T_NATIVE_FLOAT
Number of Values: 1
Range or Valid: 1 to 2.0e15
Data Source: PGE
Description: Earth-Sun distance.

Swath Dimensions:

- Dimension Name: nTimes
Data Type: HE5T_NATIVE_INT
Dimension Type: FIXED
Number of Values: 1
Range or Valid: Range is 0 to 9999.
Data Source: L1B
Description: Number of along-track scan lines in the output.

- Dimension Name: nXtrack
Data Type: HE5T_NATIVE_INT
Dimension Type: FIXED
Number of Values: 1
Range or Valid: Range is 1 to 60.
Data Source: L1B
Description: Number of cross-track scan pixels in the output.

Geolocation Fields:

- Field Name: GroundPixelQualityFlags
Data Type: HE5T_NATIVE_UINT16
Dimensions: nTimes,nXtrack
Range or Valid: Range is 0 to 65534.
Missing Value: 65535
Offset: 0.0d0
Scale Factor: 1.0d0
Units: NoUnits
Data Source: L1B
Title: "Ground Pixel Quality Flags"
Unique Field Definition: TOMS-OMI-Shared
Description: >

Bits 0 to 3 together contain the land/water flags:

- 0 - shallow ocean
- 1 - land
- 2 - shallow inland water
- 3 - ocean coastline/lake shoreline
- 4 - ephemeral (intermittent) water
- 5 - deep inland water
- 6 - continental shelf ocean
- 7 - deep ocean
- 8-14 - not used
- 15 - error flag for land/water

Bits 4 to 6 are flags that are set to 0 for FALSE, or 1 for TRUE:

- Bit 4 - sun glint possibility flag
- Bit 5 - solar eclipse possibility flag
- Bit 6 - geolocation error flag

Bit 7 is reserved for future use (currently set to 0).

Bits 8 to 14 together contain the snow/ice flags (based on NISE):

- 0 - snow-free land
- 1-100 - sea ice concentration (percent)
- 101 - permanent ice (Greenland, Antarctica)
- 102 - not used
- 103 - dry snow
- 104 - ocean (NISE-255)
- 105-123 - reserved for future use
- 124 - mixed pixels at coastline (NISE-252)
- 125 - suspect ice value (NISE-253)
- 126 - corners undefined (NISE-254)
- 127 - error

Bit 15 - NISE nearest neighbor filling flag.

(See Section 6.2 of Reference 4 for more details.)

- Field Name: Latitude
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nTimes,nXtrack
Range or Valid: Range is -90.0 to 90.0.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: deg
Data Source: L1B
Title: "Geodetic Latitude of a Pixel Center"
Unique Field Definition: TOMS-Aura-Shared
Description: >
The geodetic latitude (in deg) at the center of the ground pixel.

- Field Name: LatitudePixelCorner

Data Type: HE5T_NATIVE_FLOAT
Dimensions: nTimesp1,nXtrackp1
Range or Valid: Range is -90.0 to 90.0.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: deg
Data Source: PGE
Title: "Geodetic Corner Latitude"
Unique Field Definition: TOMS-Aura-Shared
Description: Geodetic Latitude of pixel corners,
assuming no overlapping between pixels.

- Field Name: Longitude
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nTimes,nXtrack
Range or Valid: Range is -180.0 to 180.0.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: deg
Data Source: L1B
Title: "Geodetic Longitude of a Pixel Center"
Unique Field Definition: TOMS-Aura-Shared
Description: >
The geodetic longitude (in deg) at the center of the ground pixel.

- Field Name: LongitudePixelCorner
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nTimesp1,nXtrackp1
Range or Valid: Range is -90.0 to 90.0.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: deg
Data Source: PGE
Title: "Geodetic Corner Longitude"
Unique Field Definition: TOMS-Aura-Shared
Description: Geodetic Longitude of pixel corners,
assuming no overlapping between pixels.

- Field Name: RelativeAzimuthAngle
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nTimes,nXtrack
Range or Valid: Range is -180.0 to 180.0.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: deg(EastofNorth)
Data Source: L1B

Title: >

"Relative Azimuth Angle (sun+180-view) East of North"

Unique Field Definition: TOMS-Aura-Shared

Description: >

The relative (sun + 180 - view) azimuth angle (in deg) for the ground pixel.

- Field Name: SecondsInDay
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nTimes
Range or Valid: Range is 0.0 to 86401.0.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: s
Data Source: L1B
Title: "Seconds after UTC Midnight"
Unique Field Definition: TOMS-Aura-Shared
Description: >
The time (in s) after UTC midnight at the start of the scan.

- Field Name: SolarZenithAngle
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nTimes,nXtrack
Range or Valid: Range is 0.0 to 180.0.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: deg
Data Source: L1B
Title: "Solar Zenith Angle"
Unique Field Definition: TOMS-Aura-Shared
Description: >
The solar zenith angle (in deg) for the ground pixel.

- Field Name: SpacecraftAltitude
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nTimes
Range or Valid: Range is 4.0E05 to 9.0E05.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: m
Data Source: L1B
Title: "Spacecraft Altitude"
Unique Field Definition: TOMS-Aura-Shared
Description: >
Height above WGS84 ellipsoid.

- Field Name: SpacecraftLatitude

Data Type: HE5T_NATIVE_FLOAT
Dimensions: nTimes
Range or Valid: Range is -90.0 to 90.0.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: deg
Data Source: L1B
Title: "Spacecraft Latitude"
Unique Field Definition: TOMS-Aura-Shared
Description: >
Geodetic latitude above WGS84 ellipsoid.

- Field Name: SpacecraftLongitude
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nTimes
Range or Valid: Range is -180.0 to 180.0.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: deg
Data Source: L1B
Title: "Spacecraft Longitude"
Unique Field Definition: TOMS-Aura-Shared
Description: >
Geodetic longitude above WGS84 ellipsoid.

- Field Name: Time
Data Type: HE5T_NATIVE_DOUBLE
Dimensions: nTimes
Range or Valid: Range is -5.0D09 to 1.0D10.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: s
Data Source: L1B
Title: "Time at Start of Scan (TAI93)"
Unique Field Definition: TOMS-Aura-Shared
Description: >
The TAI93 time (in s) at the start of the scan.

- Field Name: ViewingZenithAngle
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nTimes,nXtrack
Range or Valid: Range is 0.0 to 70.0.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: deg
Data Source: L1B

Title: "Viewing Zenith Angle"
Unique Field Definition: TOMS-Aura-Shared
Description: >
The viewing zenith angle (in deg) for the ground pixel.

Data Fields:

- Field Name: AerosolIndex
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nXtrack,nTimes
Range or Valid: Range is -200 to 200
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: NoUnits
Data Source: PGE
Title: "UV Aerosol Index"
Unique Field Definition: OMI-Specific
Description: Aerosol Index dervied from UV2 fitting
window (from ~310 to ~330 nm).

- Field Name: AverageResiduals
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nChannel,nXtrack,nTimes
Range or Valid: Range is 0 to 1.0E4.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: %, percent
Data Source: PGE
Title: "Average Fitting Residuals (percent)"
Unique Field Definition: OMI-Specific
Description: Average radiance fitting residuals
(percent) for each fitting channel.

- Field Name: CloudFlag
Data Type: HE5T_NATIVE_UINT8
Dimensions: nXtrack,nTimes
Range or Valid: Range is 0 to 4.
Missing Value: 255
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: NoUnits
Data Source: PGE
Title: "Cloud Flag"
Unique Field Definition: OMI-Specific
Description: >
Cloud Flag, 0: OMCLDRR cloud-top pressure
1: OMCLD02 cloud-top pressure
2: OMCLDRR climatological cloud-top pressure

20 hPa 3: adjusted cloud-top pressure (Lambertian clouds:
above surface, above surface pressure, Mie clouds: cloud 20 hPa
optical thickness) cloud thickness is assumed 100 hPa per 20 cloud

– Field Name: EffectiveCloudFraction
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nXtrack,nTimes
Range or Valid: Range is -0.1 to 1.1.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: NoUnits
Data Source: PGE
Title: "Effective Cloud Fraction"
Unique Field Definition: OMI-Specific
Description: Effective cloud fraction fitted in the
retrievals.

– Field Name: EffectiveCloudPressure
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nXtrack,nTimes
Range or Valid: Range is 90 to 1013.25 hPa.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: hPa
Data Source: PGE
Title: "Effective Cloud-Top Pressure"
Unique Field Definition: OMI-Specific
Description: Effective Cloud-Top Pressure.

– Field Name: ExitStatus
Data Type: HE5T_NATIVE_INT8
Dimensions: nXtrack,nTimes
Range or Valid: Range is -10 to 110.
Missing Value: -127
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: NoUnits
Data Source: PGE
Title: "Retrieval Exit Status"
Unique Field Definition: OMI-Specific
Description: Retrieval exit status:
 1, converge in cost function between two iterations after
LIDORT run
 2, converge in cost function after parameter updates with
weighting functions

4, converge in ozone parameters
 3, 1 + 2
 5, 1 + 4
 6, 2 + 4
 7, 1 + 2 + 4
 if negative values occur for the last iteration, add + 100
 0, not converge
 -1, failure due to set_cldalb
 -2, failure due atmospheric input preparation
 -3, failure due to too small/large (usually large negative)
 ozone values
 -4, failure in computing Ring spectra
 -5, failure due to LIDORt calculation
 -6, failure due to the occurrence of NaN values

- Field Name: FitSpectra
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions: nWavelMax,nXtrack,nTimes
 Range or Valid: Range is 0 to 1.0.
 Missing Value: "-0X1P+100 (C language representation)"
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: NoUnits
 Data Source: PGE
 Title: "Observed Normalized Radiance: I/F"
 Unique Field Definition: OMI-Specific
 Description: Observed normalized radiance: I/F. This
 is an

optional datafield, which means it may not be present in the output.

If nWavelMax = -1 in swath attribute, or it is not listed as one of the

swath dimensions, this data field is not in the output file.

- Field Name: GlintProbability
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions: nXtrack,nTimes
 Range or Valid: Range is 0 to 1.0.
 Missing Value: "-0X1P+100 (C language representation)"
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: %, precent
 Data Source: PGE
 Title: "Glint Probability"
 Unique Field Definition: OMI-Specific
 Description: The possibility of glint probability
 (based on viewing geometry).

- Field Name: MeasurementQualityFlags

Data Type: HE5T_NATIVE_UINT8
 Dimensions: nTimes
 Range or Valid: Range is 0 to 254.
 Missing Value: 255
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: NoUnits
 Data Source: PGE
 Title: "Measurement Quality Flags"
 Unique Field Definition: OMI-Specific
 Description: >

The measurement quality flag associated with each scan line (Bit value

is 0 for not set and 1 for set):

Bit 0 – Measurement Missing Flag: All ground pixels have L1B PixelQualityFlags bit 0 set.

Bit 1 – Measurement Error Flag: Any of L1B MeasurementQualityFlags bit 0, 1 or 3 are set for radiance or solar product used.

Bit 2 – Measurement Warning Flag: Any of L1B MeasurementQualityFlags bit 2, 4, 5, 8, 9 are set for radiance or solar product used.

Bit 3 – Rebinned Measurement Flag: L1B radiance MeasurementQualityFlags bit 7 is set.

Bit 4 – SAA Flag: L1B MeasurementQualityFlags bit 10 is set for radiance or solar product used.

Bit 5 – Spacecraft Maneuver Flag: L1B MeasurementQualityFlags bit 11 is set for radiance or solar product used.

Bit 6 – Instrument Setting Error Flag: Values for Earth and solar InstrumentConfigurationId are not compatible.

Bit 7 – Ascending/Descending flag: 0 => Ascending; 1 => Descending

– Field Name: NonGasParameterAPriori
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions: nParameter,nXtrack,nTimes
 Range or Valid: Range is -1e+20 to 1e+20.
 Missing Value: "-0X1P+100 (C language representation)"
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: Specific to Each Parameter
 Data Source: PGE
 Title: "A Priori for Non-Gas Variables"
 Unique Field Definition: OMI-Specific
 Description: A priori for non-gas fitting variables.

- Field Name: NonGasParameterAPrioriError
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions: nParameter, nXtrack, nTimes
 Range or Valid: Range is -1e+20 to 1e+20.
 Missing Value: "-0X1P+100 (C language representation)"
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: Specific to Each Parameter
 Data Source: PGE
 Title: "A Priori Error for non-Gas Fitting
 Variables"
 Unique Field Definition: OMI-Specific
 Description: A priori error for non-gas fitting
 variables.

- Field Name: NonGasParameterRetrieved
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions: nParameter, nXtrack, nTimes
 Range or Valid: Range is -1e+20 to 1e+20.
 Missing Value: "-0X1P+100 (C language representation)"
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: Specific to Each Parameter
 Data Source: PGE
 Title: "Retrievals for Non-Gas Fitting
 Variables"
 Unique Field Definition: OMI-Specific
 Description: Retrieved values for non-gas fitting
 variables.

- Field Name: NonGasParameterRetrievedPrecision
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions: nParameter, nXtrack, nTimes
 Range or Valid: Range is -1e+20 to 1e+20.
 Missing Value: "-0X1P+100 (C language representation)"
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: Specific to Each Parameter
 Data Source: PGE
 Title: "Retrieval Precision in for non-Gas
 Fitting Variables"
 Unique Field Definition: OMI-Specific
 Description: Retrieval precision in non-gas fitting
 variables.

- Field Name: NonGasParameterRetrievedSolutionError
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions: nParameter, nXtrack, nTimes
 Range or Valid: Range is -1e+20 to 1e+20.

Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	Specific to Each Parameter
Data Source:	PGE
Title:	"Retrieval Solution Errors in Non-Gas
Variables"	
Unique Field Definition:	OMI-Specific
Description:	Retrieval solution errors (root sum
square of random-noise	
	and smoothing errors) for non-gas fitting
variables.	
- Field Name:	03APrioriProfile
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nLayer,nXtrack,nTimes
Range or Valid:	Range is 0 to 100.0.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	DU
Data Source:	PGE
Title:	"A Priori Ozone Profile"
Unique Field Definition:	OMI-Specific
Description:	A priori ozone profile.
- Field Name:	03APrioriProfileError
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nLayer,nXtrack,nTimes
Range or Valid:	Range is 0 to 100.0.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	DU
Data Source:	PGE
Title:	"A Priori Error in Ozone Profile"
Unique Field Definition:	OMI-Specific
Description:	A priori error in ozone profile.
- Field Name:	03AveragingKernel
Data Type:	HE5T_NATIVE_INT16
Dimensions:	nLayer,nLayer,nXtrack,nTimes
Range or Valid:	Range is -100.0 to 100.0.
Missing Value:	-32767
Offset:	0.0d+00
Scale Factor:	1.0d-04
Units:	DU/DU
Data Source:	PGE
Title:	"Retrieval Ozone Averaging Kernels"
Unique Field Definition:	OMI-Specific

Description:	Retrieval averaging kernels for ozone parameters.
- Field Name:	03InformationContent
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nXtrack,nTimes
Range or Valid:	Range is 0.0 to 100.0.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	NoUnits
Data Source:	PGE
Title:	"Ozone Information Content"
Unique Field Definition:	OMI-Specific
Description:	Information content for ozone parameters.
- Field Name:	03NoiseCorrelationMatrix
Data Type:	HE5T_NATIVE_INT16
Dimensions:	nElms,nXtrack,nTimes
Range or Valid:	Range is -1.0 to 1.0.
Missing Value:	-32767
Offset:	0.0d+00
Scale Factor:	1.0d-05
Units:	DU
Data Source:	PGE
Title:	"Ozone Noise Correlation Matrix"
Unique Field Definition:	OMI-Specific
Description:	Ozone Noise Correlation Matrix, a
symetric matrix	represented by an 1-d array with nElms
elements.	The order of this 1-d array, starts from
the first	row with nLayer-1 elements, append with
the second	row with nLayer-2 elements, so on and so
forth,	down the second last row with one
element.	
- Field Name:	03RetrievedProfile
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nLayer,nXtrack,nTimes
Range or Valid:	Range is 0 to 100.0.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	DU
Data Source:	PGE
Title:	"Retrieved Ozone Profile"

Unique Field Definition:	OMI-Specific
Description:	Retrieved ozone profile.
- Field Name: 03RetrievedProfilePrecision	
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nLayer,nXtrack,nTimes
Range or Valid:	Range is 0 to 50.0.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	DU
Data Source:	PGE
Title:	"Retrieval Precision in Ozone Profile"
Unique Field Definition:	OMI-Specific
Description:	Retrieval precision in ozone profile.
- Field Name: 03RetrievedProfileSolutionError	
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nLayer,nXtrack,nTimes
Range or Valid:	Range is 0 to 50.0.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	DU
Data Source:	PGE
Title:	"Retrieval Solution Errors in Ozone Profile"
Unique Field Definition:	OMI-Specific
Description:	Retrieval solution errors (root sum square of random-noise and smoothing errors) in ozone profile.
- Field Name: 03StratosphericColumn	
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nXtrack,nTimes
Range or Valid:	Range is 0 to 600.0.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	DU
Data Source:	PGE
Title:	"Stratospheric Ozone Column"
Unique Field Definition:	OMI-Specific
Description:	Stratospheric ozone column.
- Field Name: 03StratosphericColumnPrecision	
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nXtrack,nTimes
Range or Valid:	Range is 0 to 50.0.
Missing Value:	"-0X1P+100 (C language representation)"

Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	DU
Data Source:	PGE
Title:	"Precision in Stratospheric Ozone Column"
Unique Field Definition:	OMI-Specific
Description:	Precision in stratospheric ozone column.

- Field Name:	03StratosphericColumnSolutionError
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nXtrack,nTimes
Range or Valid:	Range is 0 to 50.0.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	DU
Data Source:	PGE
Title:	"Solution Error in Stratospheric Ozone Column"
Unique Field Definition:	OMI-Specific
Description:	Solution error (root sum square of random-noise and smoothing errors) in stratospheric ozone column.

- Field Name:	03TotalColumn
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nXtrack,nTimes
Range or Valid:	Range is 0 to 600.0.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	DU
Data Source:	PGE
Title:	"Total Ozone Column"
Unique Field Definition:	OMI-Specific
Description:	Total ozone column.

- Field Name:	03TotalColumnPrecision
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nXtrack,nTimes
Range or Valid:	Range is 0 to 50.0.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	DU
Data Source:	PGE
Title:	"Precision in Total Ozone Column"
Unique Field Definition:	OMI-Specific
Description:	Precision in total ozone column.

- Field Name: 03TotalColumnSolutionError
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions: nXtrack,nTimes
 Range or Valid: Range is 0 to 50.0.
 Missing Value: "-0X1P+100 (C language representation)"
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: DU
 Data Source: PGE
 Title: "Solution Error in Total Ozone Column"
 Unique Field Definition: OMI-Specific
 Description: Solution error (root sum square of
 random-noise and smoothing errors) in total ozone
 column.

- Field Name: 03TroposphericColumn
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions: nXtrack,nTimes
 Range or Valid: Range is -20 to 150.0.
 Missing Value: "-0X1P+100 (C language representation)"
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: DU
 Data Source: PGE
 Title: "Tropospheric Ozone Column"
 Unique Field Definition: OMI-Specific
 Description: Tropospheric ozone column.

- Field Name: 03TroposphericColumnPrecision
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions: nXtrack,nTimes
 Range or Valid: Range is 0 to 50.0.
 Missing Value: "-0X1P+100 (C language representation)"
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: DU
 Data Source: PGE
 Title: "Precision in Tropospheric Ozone Column"
 Unique Field Definition: OMI-Specific
 Description: Precision in tropospheric ozone column.

- Field Name: 03TroposphericColumnSolutionError
 Data Type: HE5T_NATIVE_FLOAT
 Dimensions: nXtrack,nTimes
 Range or Valid: Range is 0 to 50.0.
 Missing Value: "-0X1P+100 (C language representation)"
 Offset: 0.0d+00
 Scale Factor: 1.0d+00

Units:	DU
Data Source:	PGE
Title:	"Solution Error in Tropospheric Ozone Column"
Unique Field Definition:	OMI-Specific
Description:	Solution error (root sum square of random-noise and smoothing errors) in tropospheric ozone column.

- Field Name:	OtherGasAPrioriColumnDensity
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nGas,nXtrack,nTimes
Range or Valid:	Range is 0 to 1.0e20.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	molecules cm ⁻²
Data Source:	PGE
Title:	"Other Gas (non-Ozone) A Priori Vertical Column Density"
Unique Field Definition:	OMI-Specific
Description:	A priori in vertical column density for trace gases (other than ozone).

- Field Name:	OtherGasAPrioriColumnDensityError
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nGas,nXtrack,nTimes
Range or Valid:	Range is 0 to 1.0e20.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	molecules cm ⁻²
Data Source:	PGE
Title:	"Other Gas (non-Ozone) A Priori Error"
Unique Field Definition:	OMI-Specific
Description:	A priori error in vertical column density for trace gases (other than ozone).

- Field Name:	OtherGasRetrievedVerticalColumnDensity
Data Type:	HE5T_NATIVE_FLOAT
Dimensions:	nGas,nXtrack,nTimes
Range or Valid:	Range is -1.0e+20 to 1.0e+20.
Missing Value:	"-0X1P+100 (C language representation)"
Offset:	0.0d+00
Scale Factor:	1.0d+00
Units:	molecules cm ⁻²
Data Source:	PGE
Title:	"Retrieved Other Gas (non-Ozone) Vertical Column Density"

Unique Field Definition: OMI-Specific
Description: Retrieved vertical column density for trace gases (other than ozone).

– Field Name: OtherGasRetrievedVerticalColumnDensityPrecision
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nGas,nXtrack,nTimes
Range or Valid: Range is 0.0 to 1.0e+20.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: molecules cm⁻²
Data Source: PGE
Title: "Retrieval Precision in Other Gas (non-Ozone)"
Unique Field Definition: OMI-Specific
Description: Retrieval precision for trace gases (other than ozone).

– Field Name: OtherGasRetrievedVerticalColumnDensitySolutionError
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nGas,nXtrack,nTimes
Range or Valid: Range is 0.0 to 1.0e+20.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: molecules cm⁻²
Data Source: PGE
Title: Retrieval Solution Errors in Other Gas (non-Ozone)
Unique Field Definition: OMI-Specific
Description: Retrieval solution errors (root sum square of random-noise and smoothing errors) or trace gases (other than ozone)

– Field Name: ProfileLevelAltitude
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nLayerp1,nXtrack,nTimes
Range or Valid: Range is -1.0 to 100.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: km
Data Source: PGE
Title: "Altitude at each retrieval level"
Unique Field Definition: OMI-Specific
Description: Altitude at layer boundaries (i.e., at

each retrieval level).
atmosphere to surface.

The levels are arranged from top of the

– Field Name: ProfileLevelPressure
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nLayerp1,nXtrack,nTimes
Range or Valid: Range is 0.01 to 1100.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: hPa
Data Source: PGE
Title: "Pressure at each retrieval level"
Unique Field Definition: OMI-Specific
Description: Pressure at layer boundaries (i.e., at
each retrieval level).

The levels are arranged from top of the

atmosphere to surface.

– Field Name: ProfileLevelTemperature
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nLayerp1,nXtrack,nTimes
Range or Valid: Range is 150. to 350.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: Kelvin
Data Source: PGE
Title: "Temperature at each retrieval level"
Unique Field Definition: OMI-Specific
Description: Temperature at layer boundaries (i.e., at
each retrieval level).

The levels are arranged from top of the

atmosphere to surface.

– Field Name: RMS
Data Type: HE5T_NATIVE_FLOAT
Dimensions: nChannel,nXtrack,nTimes
Range or Valid: Range is 0. to 10000.
Missing Value: "-0X1P+100 (C language representation)"
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: NoUnits
Data Source: PGE
Title: "Ratio of Fitting Residual to Measurement
Error"
Unique Field Definition: OMI-Specific
Description: Ratio of fitting residual to measurement
error.

- Field Name: SimRadiance
- Data Type: HE5T_NATIVE_FLOAT
- Dimensions: nWavelengthMax, nXtrack, nTimes
- Range or Valid: Range is 0 to 1.0.
- Missing Value: "-0X1P+100 (C language representation)"
- Offset: 0.0d+00
- Scale Factor: 1.0d+00
- Units: NoUnits
- Data Source: PGE
- Title: "Simulated Normalized Radiance: I/F"
- Unique Field Definition: OMI-Specific
- Description: Simulated normalized radiance: I/F. This is an

optional datafield, which means it may not be present in the output.

If nWavelengthMax = -1 in swath attribute, or it is not listed as one of the swath dimensions, this data field is not in the output file.

- Field Name: SurfaceAlbedo
- Data Type: HE5T_NATIVE_FLOAT
- Dimensions: nXtrack, nTimes
- Range or Valid: Range is -0.2 to 1.2.
- Missing Value: "-0X1P+100 (C language representation)"
- Offset: 0.0d+00
- Scale Factor: 1.0d+00
- Units: NoUnits
- Data Source: PGE
- Title: "Surface Albedo (Zeroth UV2)"
- Unique Field Definition: OMI-Specific
- Description: Fitted surface albedo (zeroth order in UV2).

- Field Name: TropopauseIndex
- Data Type: HE5T_NATIVE_UINT8
- Dimensions: nXtrack, nTimes
- Range or Valid: Range is 0 to 100.
- Missing Value: 255
- Offset: 0.0d+00
- Scale Factor: 1.0d+00
- Units: NoUnits
- Data Source: PGE
- Title: "Index for Tropopause"
- Unique Field Definition: OMI-Specific
- Description: Index for tropopause level in the ozone profile.

- Field Name: Wavelength
- Data Type: HE5T_NATIVE_FLOAT

Dimensions: nWavelengthMax,nXtrack,nTimes
 Range or Valid: Range is 250 to 400.
 Missing Value: "-0X1P+100 (C language representation)"
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: nm
 Data Source: PGE
 Title: "Wavelengths used in the retrieval"
 Unique Field Definition: OMI-Specific
 Description: Wavelengths used in the retrieval. This

is an

optional datafield, which means it may not be present in the output.

If nWavelengthMax = -1 in swath attribute, or it is not listed as one of the

swath dimensions, this data field is not in the output file.

- Field Name: nChannelWavelength
 Data Type: HE5T_NATIVE_UINT16
 Dimensions: nChannel,nXtrack,nTimes
 Range or Valid: Range is 0 to 1000.
 Missing Value: 65535
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: NoUnits
 Data Source: PGE
 Title: "Number of Wavelengths in Each Fitting Window"
 Unique Field Definition: OMI-Specific
 Description: Number of wavelengths in each fitting window.

- Field Name: nFittingWavelength
 Data Type: HE5T_NATIVE_UINT16
 Dimensions: nXtrack,nTimes
 Range or Valid: Range is 0 to 1000.
 Missing Value: 65535
 Offset: 0.0d+00
 Scale Factor: 1.0d+00
 Units: NoUnits
 Data Source: PGE
 Title: "Number of Wavelengths in the Fitting"
 Unique Field Definition: OMI-Specific
 Description: Number of wavelengths used in the fitting.

- Field Name: nIteration
 Data Type: HE5T_NATIVE_UINT8
 Dimensions: nXtrack,nTimes
 Range or Valid: Range is 0 to 20.

Missing Value: 255
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: NoUnits
Data Source: PGE
Title: "Number of Iterations"
Unique Field Definition: OMI-Specific
Description: Number of retrieval iterations.

- Field Name: nSmallPixelColumns
Data Type: HE5T_NATIVE_UINT8
Dimensions: nTimes
Range or Valid: Range is 0 to 5.
Missing Value: 255
Offset: 0.0d+00
Scale Factor: 1.0d+00
Units: NoUnits
Data Source: PGE
Title: "Number of Small Pixel Columns"
Unique Field Definition: OMI-Specific
Description: Number of small pixel columns.

Core Metadata:

- Metadata Name: AssociatedInstrumentShortName
Mandatory: T
Data Type: VA20
Number of Values: 1
Range or Valid: Valid is "OMI".
Data Source: MCF
Description: Actual is "OMI".
- Metadata Name: AssociatedPlatformShortName
Mandatory: T
Data Type: VA20
Number of Values: 1
Range or Valid: Valid is "Aura".
Data Source: MCF
Description: Actual is "Aura".
- Metadata Name: AssociatedSensorShortName
Mandatory: T
Data Type: VA20
Number of Values: 1
Range or Valid: Valid is "CCD Ultra Violet" and "CCD Visible".
Data Source: MCF
Description: Actual is "CCD Ultra Violet".
- Metadata Name: AutomaticQualityFlag
Mandatory: T

Data Type: VA64
Number of Values: 1
Range or Valid: Valid are "Passed", "Suspect" and "Failed".
Data Source: PGE
Description: >
A granule-level quality flag that applies generally to the granule and specifically to the parameters at the granule level.

- Metadata Name: AutomaticQualityFlagExplanation
Mandatory: T
Data Type: VA255
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: PGE
Description: >
The definitions of "Passed", "Suspect" and "Failed" should go here.

- Metadata Name: DayNightFlag
Mandatory: T
Data Type: VA5
Number of Values: 1
Range or Valid: Valid are "Day", "Night" and "Both".
Data Source: MCF
Description: Actual is "Day".

- Metadata Name: EquatorCrossingDate
Mandatory: T
Data Type: D
Number of Values: 1
Range or Valid: Range is "1995-01-01" to "2099-12-31".
Data Source: L1B
Description: >
The date of the descending equator crossing in the granule.

- Metadata Name: EquatorCrossingLongitude
Mandatory: T
Data Type: LF
Number of Values: 1
Range or Valid: Range is -180.0d0 to 180.0d0.
Data Source: L1B
Description: >
The longitude of the descending equator crossing in the granule.

- Metadata Name: EquatorCrossingTime
Mandatory: T
Data Type: T
Number of Values: 1
Range or Valid: Range is "01:00:0.000000" to "01:59:59.999999".
Data Source: L1B

Description: >
The time of the descending equator crossing in the granule.

- Metadata Name: InputPointer
Mandatory: T
Data Type: VA255
Number of Values: 0 to 10
Range or Valid: >
Valid file names, each in double quotes, separated by commas, all surrounded by curved brackets.
Data Source: PGE
Description: >
Example is
("OMI-Aura_L1-OML1BRUG_2003m0415t0507-
o01067_v001-2003m0630t230758.he4",
"OMI-Aura_L1-OML1BIRR_2003m0415t0542-
o01067_v001-2003m0630t185511.he4",
"" , "" , "" , "" , "" , "" , "" , "" , "").

- Metadata Name: LocalGranuleID
Mandatory: T
Data Type: VA80
Number of Values: 1
Range or Valid: >
Range is
"OMI-Aura_L2-PROF0Z_1995m0101t0000-
o00000_v003-1995m0101t000000.he5" to
"OMI-Aura_L2-PROF0Z_2099m1231t2359-
o99999_v999-2099m1231t235959.he5".
Data Source: PGE
Description: >
Example is
"OMI-Aura_L2-PROF0Z_2002m0630t2354-
o21434_v001-2003m0515t181917.he5"
(see Appendix E of Reference 3).

- Metadata Name: LOCALVERSIONID
Mandatory: T
Data Type: VA60
Number of Values: 1
Range or Valid: >
Valid: are "RFC1321 MD5 = not yet calculated" and
"RFC1321 MD5 = [0-9,a-f]{32}"
Data Source: PCF
Description: >
MD5 fingerprint of the HDF product file.

- Metadata Name: OperationalQualityFlag
Mandatory: T
Data Type: VA20

Number of Values: 1
 Range or Valid: >
 Valid are "Passed", "Failed", "Being Investigated", "Not Investigated",
 "Inferred Passed", "Inferred Failed" and "Suspect".
 Data Source: L1B
 Description: >
 A granule-level quality flag that applies generally to the granule and specifically to the parameters at the granule level.

- Metadata Name: OperationalQualityFlagExplanation
 Mandatory: T
 Data Type: VA255
 Number of Values: 1
 Range or Valid: Not applicable (free format).
 Data Source: L1B
 Description: >
 The criteria for setting the OperationalQualityFlag should be stated here (this Metadata will not appear in the granule).

- Metadata Name: OPERATIONMODE
 Mandatory: T
 Data Type: VA20
 Number of Values: 1
 Range or Valid: >
 Valid are "Calibration", "Diagnostic", "Initialization", "Launch",
 "Normal", "Roll", "Routine", "Safe", "Solar Calibration", "Standby",
 "Survival" and "Test".
 Data Source: PCF
 Description: Actual is "Test".

- Metadata Name: OrbitNumber
 Mandatory: T
 Data Type: I
 Number of Values: 1
 Range or Valid: Range is 1 to 999999
 Data Source: L1B
 Description: The OMI orbit number.

- Metadata Name: ParameterName
 Mandatory: T
 Data Type: VA40
 Number of Values: 1
 Range or Valid: Valid is "Total Column Sulphur Dioxide".
 Data Source: PGE
 Description: >
 The measured science parameter expressed in the granule.

- Metadata Name: PGEVERSION
 Mandatory: T
 Data Type: VA10
 Number of Values: 1
 Range or Valid: Range is "0.0.0" to "9.9.99".
 Data Source: PCF
 Description: Actual is "1.0.1".

- Metadata Name: ProductionDateTime
 Mandatory: T
 Data Type: DT
 Number of Values: 1
 Range or Valid: >
 "2003-01-01T00:00:00.000Z" to "2099-12-31T24:59:59.999Z"
 Data Source: TK
 Description: The date and time of the Level 2 processing.

- Metadata Name: QAPercentCloudCover
 Mandatory: T
 Data Type: I
 Number of Values: 1
 Range or Valid: Range is 0 to 100
 Data Source: PGE
 Description: >
 The percent of the data in the granule that have cloud cover.

- Metadata Name: QAPercentInterpolatedData
 Mandatory: T
 Data Type: I
 Number of Values: 1
 Range or Valid: Range is 0 to 100
 Data Source: PGE
 Description: >
 The percent of the data in the granule that are interpolated.

- Metadata Name: QAPercentMissingData
 Mandatory: T
 Data Type: I
 Number of Values: 1
 Range or Valid: Range is 0 to 100.
 Data Source: PGE
 Description: >
 The percent of the data in the granule that are missing.

- Metadata Name: QAPercentOutOfBoundsData
 Mandatory: T
 Data Type: I
 Number of Values: 1
 Range or Valid: Range is 0 to 100.

Data Source: PGE
Description: >
The percent of the data in the granule that are out of bounds data.

- Metadata Name: RangeBeginningDate
Mandatory: T
Data Type: D
Number of Values: 1
Range or Valid: Range is "1995-01-01" to "2099-12-31".
Data Source: L1B
Description: The year, month and day when the granule began.
- Metadata Name: RangeBeginningTime
Mandatory: T
Data Type: T
Number of Values: 1
Range or Valid: Range is "00:00:00.000000" to "23:59:59.999999".
Data Source: L1B
Description: >
The hour, minute, second and fraction of a second when the granule began.
- Metadata Name: RangeEndingDate
Mandatory: T
Data Type: D
Number of Values: 1
Range or Valid: Range is "1995-01-01" to "2099-12-31".
Data Source: L1B
Description: The year, month and day when the granule ended.
- Metadata Name: RangeEndingTime
Mandatory: T
Data Type: T
Number of Values: 1
Range or Valid: Range is "00:00:00.000000" to "23:59:59.999999".
Data Source: L1B
Description: >
The hour, minute, second and fraction of a second when the granule ended.
- Metadata Name: REPROCESSINGACTUAL
Mandatory: T
Data Type: VA20
Number of Values: 1
Range or Valid: >
Valid: Valid are "processed 1 time", "processed 2 times", etc...
Data Source: PCF
Description: >
An indication of what reprocessing has been performed on the

granule.

- Metadata Name: ReprocessingPlanned
Mandatory: T
Data Type: VA45
Number of Values: 1
Range or Valid: >
Valid: "no further update anticipated", "further update is anticipated"
and "further update anticipated using enhanced PGE".
Data Source: DP
Description: Actual is "further update is anticipated".
- Metadata Name: ScienceQualityFlag
Mandatory: T
Data Type: VA20
Number of Values: 1
Range or Valid: >
Valid: "Passed", "Failed", "Being Investigated", "Not Investigated",
"Inferred Passed", "Inferred Failed" and "Suspect".
Data Source: DP
Description: Actual is "Not Investigated".
- Metadata Name: ScienceQualityFlagExplanation
Mandatory: T
Data Type: VA255
Number of Values: 1
Range or Valid: Not applicable (free format).
Data Source: DP
Description: >
An explanation of the criteria used to set the science quality flag
should go here.
- Metadata Name: ShortName
Mandatory: T
Data Type: VA8
Number of Values: 1
Range or Valid: Valid is "PROF0Z".
Data Source: MCF
Description: Actual is "PROF0Z".
- Metadata Name: SizeMBECSDataGranule
Mandatory: F
Data Type: LF
Number of Values: 1
Range or Valid: Range is 0.00d+00 to 1.00d+04.
Data Source: DSS
Description: >

The volume of data contained in the granule in Mb (this Metadata will not appear in the granule).

- Metadata Name: VersionID
Mandatory: T
Data Type: SI
Number of Values: 1
Range or Valid: Range is 0 to 999.
Data Source: MCF
Description: Actual is 1 for test and pre-launch.

Product Specific Attributes:

- Metadata Name: EndBlockNr
Mandatory: T
Data Type: SI
Number of Values: 1 to 500
Range or Valid: Range is 1 to 50.
Data Source: L1B
Description: The number of the NOSE end block along the track.
- Metadata Name: PathNr
Mandatory: T
Data Type: I
Number of Values: 1 to 500
Range or Valid: Range is 1 to 466.
Data Source: L1B
Description: Number of the NOSE path within the repeat cycle.
- Metadata Name: SolarEclipse
Mandatory: T
Data Type: VA10
Number of Values: 1
Range or Valid: Valid are "TRUE" and "FALSE".
Data Source: L1B
Description: >
The indicator that during part of the measurements a solar eclipse occurred.
- Metadata Name: SouthAtlanticAnomalyCrossing
Mandatory: T
Data Type: VA10
Number of Values: 1
Range or Valid: Valid are "TRUE" and "FALSE".
Data Source: L1B
Description: >
The indicator that during part of the measurements the spacecraft was in the SAA.

- Metadata Name: StartBlockNr
- Mandatory: T
- Data Type: SI
- Number of Values: 1 to 500
- Range or Valid: Range is 1 to 50.
- Data Source: L1B
- Description: Number of the NOSE start block along the track.

Archived Metadata:

- Metadata Name: ESDTDescriptorRevision
- Mandatory: T
- Data Type: VA20
- Number of Values: 1
- Range or Valid: Range is "0.0.0" to "9.9.99".
- Data Source: MCF
- Description: >

This is the version of the ESDT descriptor file as determined by ECS.

- Metadata Name: LongName
- Mandatory: T
- Data Type: VA80
- Number of Values: 1
- Range or Valid: >
- Valid is "OMI/Aura Vertical Ozone (03) Profile 1-Orbit L2 Swath 13x48 km"
- Data Source: MCF
- Description: >
- Actual is "OMI/Aura Vertical Ozone (03) Profile 1-Orbit L2 Swath 13x48 km"
- (see Section 7.0 of Reference 2).

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 Kurosu, T. P.:

"Ozone profile retrievals from the Ozone Monitoring Instrument",
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2. "HDF-EOS Aura File Format Guidelines"
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3. "OMI Science Software Delivery Guide for Version 0.9"
(OMI-SSDG-0.9.9, Version 0.9.9, 21 October 2003)
4. "OMI GDPS Input/Output Data Specification (IODS) Volume 2"
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5. "Release 6A Implementation Earth Science Data Model for the ECS
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(420-TP-022-002, June 2001)
(<http://edhs1.gsfc.nasa.gov/waisdata/rel6/html/tp4202202.html> and
http://edhs1.gsfc.nasa.gov/waisdata/rel6/html/tp42022_adds.html)
6. "OMI L2 – L4 Metadata Reference Guide"
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